

Claims:

1. Method of making a ferrous article of high serviceability comprising (a) forming said ferrous article (b) austenitizing said
5 ferrous article at a temperatures between 1450-1750°F (c) quickly transferring said ferrous article to a thermal bath (d) holding said ferrous article in said thermal bath for a period from 10 minutes to three hours whereby said ferrous article comprises at least 60% bainite (e) quenching said ferrous article
10 in a bath at ambient temperatures to convert substantially all of the remaining austenite to martensite, and (f) plastically deforming said article.
2. Method of claim 1 wherein said ferrous article is a steel article.
3. Method of claim 1 wherein said ferrous article is a steel chain
15 link.
4. Method of claim 1 wherein step (f) is conducted by cold working.
5. Method of claim 1 wherein step (c) is conducted in sixty seconds or less.
- 20 6. Method of claim 1 wherein step (c) is conducted in twenty seconds or less.
7. Method of claim 1 wherein step (f) comprises both compression deformation and tensile deformation.
8. Method of claim 7 wherein said plastic deformation is
25 conducted to at least 60% of the yield strength of said article.

9. Method of claim 7 wherein said compression deformation comprises shot peening.
10. Method of claim 7 wherein said compression deformation comprises the application of compressive stress in the range of
5 -50,000psi to -200,000psi.
11. Method of claim 7 wherein the tensile deformation comprises dynamic stress to at least 60% of yield strength.
12. Method of making a steel chain link of high serviceability comprising (a) forming said steel chain link of steel (b)
10 austenitizing said steel chain link at a temperatures between 1450-1750°F (c) transferring said steel chain link to a thermal bath in a period less than 60 seconds (d) holding said steel chain link in said thermal bath for a period from 10 minutes to three hours whereby said steel chain link comprises at least 60%
15 bainite (e) quenching said steel chain link in a bath to convert substantially all of the remaining austenite to martensite, and (f) plastically deforming said steel chain link by (i) compression deformation and (ii) tensile deformation to at least 60% of its yield strength.
- 20 13. An article made by the method of claim 1.
14. A steel chain link made by the method of claim 12.
15. An article made by the method of claim 1 having a hardness of Rc 47 to Rc 63.
- 25 16. A chain link of excellent serviceability made by the method of claim 3 and having a hardness of Rc 47 to Rc 63.

17. Method of claim 12 wherein said compression deformation comprises ball peening.
18. Method of claim 12 wherein said compression deformation comprises the application of compressive stress in the range of
5 -50,000psi to -200,000psi.
19. Method of claim 12 wherein said tensile deformation is applied to said chain link as a part of a chain.
20. Method of claim 12 wherein step c is performed in 20 seconds or less.

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